



Title: Modified Barley α -Glucosidase
Inventor(s): Henson/Muslin/Clark
Application No.:
Docket Number: 960296.97486

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|---------|--|-------|
| BARLEY | MA-----TVCV-----LILCLCLCLFAPRLCSSKEECFLAAR--- | (32) |
| S. BEET | Me-----rskipryicptlavvLpLvLCmvvegatrSKndrqqeAigyg | (44) |
| SPINACH | MkkkipalalCi-----LLvflLqyLvAqistSendpeuvigy-- | (38) |
| ARABID. | Ms-----slhwfpnif----lvvvfLeLrssqvyleeEEstvvgy-- | (37) |
| BARLEY | -----TVLAVAVTMEG-----ALRAEAATGGRSSTG-----DVQRLAVY | (66) |
| S. BEET | yqvkakvdnstgkal-----tallqlirnsppvyp-----DihfLsft | (35) |
| SPINACH | -----gykvk6Vxvda-----gtRrsLcalpqlvknssvygpdQLt6it | (78) |
| ARABID. | -----gyvvr6Vgvd6nrqvltakldlikp66vyap-----DiksLnlh | (76) |
| BARLEY | ASLETDRLRVRIITADHPRWEVPODIIIPRPAPGD-----VLHDAFPA | (109) |
| S. BEET | ASfEeDdtLRiRITDAnnRWEiFnevlPFPPpppppl6slqhlpxPi | (133) |
| SPINACH | ASLEandRLRVRIITDAKlRWEiPdnlhRhqPpp-----ppph6lss | (121) |
| ARABID. | vSLET6eRLRiRITDssq6RWEiPetvIPRagnhe-----prifstee | (119) |
| BARLEY | S-----S-----APLQCRVLSFAGSDLVLTU-H-ASPFRFTVSRRTGDT | (147) |
| S. BEET | p-----q-----ngptcttVLShphSDLafTlfh-ttPFgFTIyRkStHdv | (172) |
| SPINACH | lyrtll6spt--tnrrk6lLShpnSDLcfal-inttPFgFTiSRkStHdv | (168) |
| ARABID. | d-----ggnsPennfl6dps6dlvftlh-n-ttFFgPsVSR6S6CDi | (159) |
| BARLEY | LFDTPAG-----L-----VFRDKYLEVTSALPAGRASLYGLGEHTK | (183) |
| S. BEET | LFDatPip6npt6tL-----iykDqYLqLsS6LPAq6AhLYGLGEHTK | (215) |
| SPINACH | LFDatP6pt6npt6tL-----iFiDqYLhlT6SLF6tRAhiYGLGEH6K | (211) |
| ARABID. | LFDTS6d-----s6ds6tyfiFkDqLqL6SALPenR6nLYGIGEHK | (202) |
| BARLEY | SSFRLRH6DSFTLWNADIGAS6YVDVNL6Y6SHFF6YMDVRAP-----GT6H | (227) |
| S. BEET | ptFqLaHNg6lTLWNADIG6f6rD6NLYG6SHFF6YMDVR6ppm6--- | (262) |
| SPINACH | ptFqLaHNg6lTLmraADIP6S6np6VNL6Y6SHFF6YMDVR6spva--- | (258) |
| ARABID. | rSFRLip6et6TLWNADIG6enp6VNL6Y6SHFF6YMDVR6gk6ne6aGT6H | (252) |
| BARLEY | GVLLLSNGMDVLYGGS6YVYKVI6GVLD6YF6F6SPNPLAVVDQYTQLIA | (277) |
| S. BEET | GVfLL6SNGMDV6yt6G6r6TYKVI6G6i6dLY6F6AG6t6P6mV6DQY6kLI6 | (312) |
| SPINACH | GVLLL6r6SNGMDV6Y6t6Gr6TYKVI6G6i6dLY6F6AG6Ps6gqV6Ve6Q6T6rv6 | (308) |
| ARABID. | GVLLL6n6SNGMDV6K6Y6Ch6r6TY6n6VI6G6V6i6dLY6F6AG6Ps6m6V6n6QY6Te6 | (302) |
| BARLEY | RPAPMPYWSF6FHQ6RYCYLNV6DL6RVVARYAKARI6LEVHMTDIDYMD | (327) |
| S. BEET | RPAPMPY6W6F6FHQ6R6Y6r6dv6r6ei6Et6V6dk6Y6A6RI6LEVHMTDIDYMD | (362) |
| SPINACH | RPAPMPY6W6F6G6Q6RY6Y6hd6V6e6L6q6V6V6AG6YAKARI6LEVHMTDIDYMD | (356) |
| ARABID. | RPAPMPY6W6F6FHQ6RY6CY6N6V6DL6EY6V6d6Y6AKAG6LEVHMTDIDYMD | (352) |
| BARLEY | CFKDF6TL6RVN6F6IA6ELR6F6V6DL6R6NAQ6Y6VL6DP6G6IR6VD6P6IC6AT6Y6T | (377) |
| S. BEET | aFKDF6TL6p6V6hf6p6ld6km6q6F6V6k6L6H6Ng6Q6Y6V6P6IL6DF6I--- | (409) |
| SPINACH | ayKDF6TL6p6V6N6f6ld6km6k6F6V6n6L6H6Ng6Q6Y6V6IL6DF6I--- | (405) |
| ARABID. | GyKDF6TL6p6V6N6f6e6ck6m6q6F6V6d6L6K6Ng6Q6Y6VL6IL6DP6I--- | (399) |
| BARLEY | FVRGM6QCDIFL6KRNG6TNF6VGN6V6PGDV6Y6F6DF6MH6FAA6EF6W6ARE6IS6L6RR | (427) |
| S. BEET | F6r6GM6Q6sn6V6F6KRNG6np6Y6L6G6V6W6G6p6V6Y6F6DF6ld6FAA6r6F6W6d6E6I6kr6FRd | (459) |
| SPINACH | y6r6GM6kh6D6V6FL6K6NG6c6yl6G6V6W6G6p6V6Y6F6DF6l6k6P6Alt6F6W6d6E6I6kr6Fl6n | (455) |
| ARABID. | yn6r6GM6e6a6D6V6F6KRNG6ep6yl6G6V6W6G6k6V6Y6F6DF6ln6FAA6t6F6W6n6E6I6kr6F6qe | (443) |
| BARLEY | TIFVD6GL6W6ID6M6E6IS6NF6Y6N6--6EF6MN6--AL6DD6PP6Y6R6IN6D6GT6RP6IN6N6KT | (475) |
| S. BEET | il6P6ID6G6i6W6ID6M6E6AS6NF6ite6a6t6P6G6--6LD6N6PP6Y6K6IN6N6G6g6Y6P6IN6S6KT | (507) |
| SPINACH | il6FVD6GL6W6ID6M6E6IS6NF6ie6--6a6P6ip6gst6LD6N6PP6Y6K6IN6N6G6V6m6L6P6IN6N6KT | (503) |
| ARABID. | il6FID6GL6W6ID6M6E6IS6NF6it6--6a6l6s6ge6EL6D6FF6Y6K6IN6N6G6d6K6RP6IN6N6KT | (497) |
| BARLEY | VRFLAVHYGGV6TEY6E6H6N6LF6GL6LEA6R6AT6GR6VL6R6DT6GR6R6F6VL6SR6ST6F6V6 | (523) |
| S. BEET | ip6t6Am6HY6G6n6V6E6Y6n6a6H6N6LY6G6L6E6q6AT6re6sl6v6R6p6t6R6g6P6F6IL6SR6ST6F6u6 | (557) |
| SPINACH | ip6ft6Am6HY6G6i6p6E6Y6n6v6N6L6F6G6Y6LEA6rv6T6ra6lik6T6ek6R6F6VL6SR6ST6F6S6G | (553) |
| ARABID. | V6p6ts6i6H6f6G6n6s6E6Y6d6a6H6N6LY6GL6E6A6K6ATH6q6a6V6d6T6G6K6R6P6F6IL6SR6ST6F6v6 | (547) |
| BARLEY | SGRYTAYW6T6G6N6AAT6W6GL6R6YS6INT6M6LS6F6GL6F6GM6FM6ICAD6CC6FN6GN6T6E | (575) |
| S. BEET | SG6k6Y6Ah6W6T6G6N6A6Ar6W6d6L6q6YS6Ip6TML6n6F6GL6F6GM6FM6ICAD6IC6G6F6a6s6T6E | (607) |
| SPINACH | SG6K6Y6Ah6W6T6G6N6AAT6W6d6L6Y6S6Ip6M6L6d6F6GL6F6G6FM6GAD6IC6CF6L6N6T6E | (603) |
| ARABID. | SG6K6Y6Ah6W6T6G6N6A6K6W6d6L6a6Y6S6Ip6i6L6n6F6GL6F6G6FM6GAD6IC6CF6sh6d6T6E | (597) |
| BARLEY | ELC6RW6IQ6L6G6AF6Y6F6FS6R6HS6A6FT6VR6RE6LY6W6S6VA6S6RK6AL6GL6RY6LL | (625) |
| S. BEET | ELC6r6W6IQ6L6G6AF6Y6F6FS6R6HS6A6rd6t6h6q6ELY6W6s6VA6S6Ar6t6V6L6GL6RY6LL | (637) |
| SPINACH | ELC6r6W6IQ6L6G6AF6Y6F6FS6R6HS6l6g6t6y6q6ELY6W6s6VA6S6AR6V6L6GL6RY6LL | (633) |
| ARABID. | ELC6r6W6IQ6L6G6AF6Y6F6FS6R6HS6l6g6Ta6R6q6ELY6W6d6VA6S6AR6K6V6L6GL6RY6LL | (647) |

FIG 2

Title: Modified Barley α -Glucosidase
 Inventor(s): Henson/Muslin/Clark
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|---------|---|-------|
| BARLEY | PYFYTLMYEAHMTGAPIARPLFFSYPHDVATYGVDRQFLGRGVLVSPVL | (673) |
| S. BEET | PYYTLMYdAnlrGcPIARPLfctPdDVATYGissQFLiGRGimvSPVL | (707) |
| SPINACH | PYFYTLMYEAqlnGcPIARPLFFSfPdDikTYGiesQFLLGkGVmVSPVL | (703) |
| ARABID. | FhlyTLMYEAHvsCnPIARPLFFSfPqDtkTYeiDsCFLiGksimVSPaL | (697) |
| BARLEY | EPGPTTVDAYFPAGRMYRLYDYS LAVATRTGKHVRLPAPADTVNVHLTGG | (723) |
| S. BEET | qPGssiVnAYsPrGnWvsLbnYtesVsvsaGtyVsLsAPPDhinVHiheG | (757) |
| SPINACH | kPGVvsvtAYFPzGnwfdLfDYtrsvtasTGryVtLsAPPDhinVHiqeG | (753) |
| ARABID. | kqGavaVDAYFPAGnwfdLfnySfAVggdsGKHVRLctPADhVNVHvreg | (747) |
| BARLEY | TILPLOQSALTTSRARRTA FHLLVALAEDGTASGYLFLDDGDSPEYGR-R | (772) |
| S. BEET | nIvamQgeAmTfqaARsTpFHLLVvmsdhvastGeLFLDnGiemdiGg-p | (806) |
| SPINACH | nILamQgkAmTTqaARKTpFHLLVvmsdcGaefGeLFLDDGvevtmGvnR | (803) |
| ARABID. | siIvamQgeALITrdARKTpyqLLVvaerleniSGeLFLDDGcnlrmGa-g | (796) |
| BARLEY | S---D-WSMVRFNyKIPNNKGA:KVKSEVVHNSYAQSRTLVISKVVLMGH | (916) |
| S. BEET | g---gkwtlVRFFaesgaN--nlctisSEVVnrgYamSgrwVmdKitilGI | (851) |
| SPINACH | g---k-WtLVKF--iaaeaKqtcitSdVVegefAvSqkwVIDKvtiIGi | (847) |
| ARABID. | ggrrD-WtLVKF--rcyvtgxevvlrSEVVnpeYAekmkwaIgKVtfvGf | (845) |
| BARLEY | RSFAAPKKLTVHVNSAEVEASSSAGTRYQNAGSLGGVAH-IGGLSLVVGE | (867) |
| S. BEET | krrvkiKeyIVqkdagaikvkglgrrtsshngGgffVsv-IedLrqlvGg | (900) |
| SPINACH | RkgtkingyIVrtgavtrkgdkSkikstpdarkGefiVAe-IsGLnLllGr | (896) |
| ARABID. | envenvKtyeVrtserlrspriSlktvscnddprflsvevakLSLlVCK | (893) |
| BARLEY | EFELKV---AMSY | (877) |
| S. BEET | aFkLelefegAtrv | (914) |
| SPINACH | EFkL-----vlh | (903) |
| ARABID. | kFEmrl-----rlt- | (902) |

FIG 2